

REMARKS

Claims 1-4, 6-22, 28-38, and 40-47 are pending. Claims 12-14, 17-19, and 22 are rejected under 35 U.S.C. § 102(b). Claims 1-4, 6-11, 28-38, and 40-47 are rejected under 35 U.S.C. § 103(a). Claims 8, 32, 42, and 45 are currently amended.

Independent claims 12 and 18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Reudink (U.S. Pat. No. 5,648,968). Claim 12 recites “A communication system comprising: a transmitter having a plurality of spaced apart antennas; **a channel measurement circuit coupled to the plurality of spaced apart antennas and arranged to produce a path profile estimate in response to a signal from a remote transmitter**; a channel input terminal coupled to receive a data communication signal; and **a delay circuit** operatively coupled between the channel input terminal and the plurality of spaced apart antennas **providing a distinct delay in the data communication signal in response to the path profile estimate.**” Claim 18 recites “A data communication system comprising: a transmitter having a plurality of spaced apart antennas suitable for communication with at least one remote receiver; an element providing a derived version of each communication signal transmitted from a transmitter channel to the plurality of spaced apart antennas; and **a delay element** providing a distinct delay associated with each antenna and **configured to alter the distinct delay in response to a change of a path profile associated with the transmitter channel.**” (emphasis added).

The present invention of claims 12 and 18 is very different from the disclosure Reudink. Examiner has cited control circuit 83 (Figure 8) as an anticipatory disclosure of the foregoing emphasized portions of claims 12 and 18. Applicants respectfully disagree. Reudink does not disclose “providing a distinct delay in the data communication signal in response to the path profile estimate” (claim 12) or “to alter the distinct delay in response to a change of a path profile associated with the transmitter channel” (claim 18). The path profile estimate of claims 12 and 18 is defined at page 12, lines 2-9. Referring to Figure 7, the instant specification teaches “Since use of delay parameters alone to accomplish transmit diversity may not be enough to accommodate

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reliable signal reception at a mobile terminal under certain unique situations, it is also advantageous to either phase shift the signals to be transmitted and/or scale the amplitude of the signals to be transmitted. These unique situations can be determined by taking channel measurements 730 for the different signal paths 722-728 associated with the multiple antennas 710-714. These channel measurements 730 will provide an indication of the signal phase and signal amplitude to be associated with a particular signal to be transmitted over each signal path 732-736.”

Diversity delay of the present invention is described with reference to Figure 3 at page 12, lines 14-20. Therein, the specification teaches “As seen in Figure 3, the base station 102 can measure the delay profile 302, 304, 306 in the uplink transmission from a mobile terminal 104, 106, 108 to implement one method of choosing channel delays 214-230 associated with multiple antennas 208-212 according to one embodiment of the present invention. The delay 214-230 between the antennas 208-212 can be chosen so that the strongest signal paths between the base station 102 and mobile terminals 104, 106, 108 do not overlap, thereby achieving full diversity. Thus, the present method is distinct from those presently known.”

By way of contrast, Reudink does not assign a distinct delay in response to the path profile estimate (claim 12) or in response to a change of a path profile (claim 18). Reudink teaches a relatively constant delay is arbitrarily assigned to each transmit antenna so that the maximum delay is less than 64 μ sec. This relation is shown by the equation and corresponding disclosure at column 5, lines 27-40. Reudink specifically teaches that a delay unit is approximated by a formula $DN/2 < 64 \mu\text{sec}$, where D is a unit of delay and N is a number of antenna beams. Reudink fails to disclose that this constant delay is associated with a path profile estimate or a change of a path profile as required by claims 12 and 18.

Reudink discloses at column 8, line 67 through column 9, line 9 “The delay time between the transmit signals and its delayed component can be variable depending upon transmission parameters, and controllable by data maintained on relative signal strengths.” Here, applicants

understand the transmission parameters to refer to the number of antenna beams N and the 64 μ sec maximum delay discussed at column 5, lines 27-40, since these are the only transmission parameters disclosed. Applicants further understand that Reudink teaches using relative signal strength to modify delay time rather than path profile estimates as with the present invention. Thus, for all the foregoing reasons applicants respectfully submit that independent claims 12 and 18 are patentable under 35 U.S.C. § 102(b) over Reudink. Applicants further submit that claims depending from independent claims 12 and 18 are also patentable as depending from patentable claims.

Independent claims 1, 8, 28, 32, 37, 42, and 45 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rashid-Farrokhi et al. (U.S. Pat. No. 6,400,780) in view of Reudink (U.S. Pat. No. 5,648,968). Examiner admits Rashid-Farrokhi et al. fail to teach altering the distinct delay in response to a change of an estimated path profile and relies on Reudink for this limitation. As previously discussed, Reudink does not disclose at least these limitations of the claimed invention. For example, claim 1 recites "altering the distinct delay associated with a derived version of a data communication signal in response to a change of **an estimated path profile** associated with a channel of the plurality of channels." Claim 8 recites "determining a distinct communication signal delay associated with each communication channel within a plurality of communication channels, wherein each communication channel signal delay is **derived from the estimated path profile** of data associated with the respective uplink signal." Claim 28 recites "the data processor is further directed by the algorithmic software such that it can automatically **determine signal path profile parameters** using algorithmically defined relationships associated with discrete communication signal uplink data such that a signal communicated between the transmitter and each antenna will be characterized by a distinct signal delay." Claim 32 recites "signal deriving means operatively coupled to the signal distributing means for providing communication signal phase parameters associated with communication signals, wherein the phase parameters are determined from channel measurement information associated with the signal distributing means; and variable delaying means operatively coupled to the plurality of spaced apart antennas and the signal distribution means for providing discrete delays associated with **profile path estimates** of

the communication signals and the plurality of spaced apart antennas." Claim 37 recites "altering the distinct delay associated with a derived version of the data communication signal and its respective antenna if and when **an estimated path profile** associated with a communication channel changes from a prior estimated path profile." Claims 42 and 45 each recite "a delay element providing a distinct delay associated with each antenna in response to a **path profile estimate** of a signal from the at least one remote receiver." (emphasis added). The foregoing emphasized limitations are not disclosed by Reudink as previously discussed with regard to claims 15 and 18. Thus, applicants respectfully submit that each of independent claims 1, 8, 28, 32, 37, 42, and 45 and their respective depending claims are patentable under 35 U.S.C. § 103(a) over Rashid-Farrokhi et al. in view of Reudink.

In view of the foregoing, applicants respectfully request reconsideration and allowance of claims 1-4, 6-7, 12-22, 37-38, and 40-47. If the Examiner finds any issue that is unresolved, please call applicants' attorney by dialing the telephone number printed below.

Respectfully submitted,



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